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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JERRY A. PICKERING, THEODORA MILLER, and
SUSAN C. BARUCH

Appeal 2009-013748
Application 10/691,778
Technology Center 3700

Before JENNIFER D. BAHR, LINDA E. HORNER, and
FRED A. SILVERBERG, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Jerry A. Pickering et al. (Appellants) seek our review under 35 U.S.C. § 134 of the Examiner's decision rejecting claims 64, 65, 69, 70, 86, and 87 under 35 U.S.C. § 103(a) as being unpatentable over Eddy (US 6,159,588; issued December 12, 2000) and Donnelly (US 3,669,707; issued June 13, 1972). We have jurisdiction under 35 U.S.C. § 6(b). We REVERSE.

THE INVENTION

Appellants' claimed invention relates to a fuser member used in an electrostatographic imaging and recording apparatus for fixing toner to a substrate. Spec. 1, para. [03]. Claim 64, reproduced below, is representative of the subject matter on appeal.

> 64. A fuser member for a toner fusing system or process comprising:
>
> (a) a base; and
>
> (b) a fusing surface layer comprising:
>
> (i) a fluoroelastomer; and
>
> (ii) filler particles comprising polytetrafluoro-ethylene filler particles with a modulus greater than the modulus of the fluoroelastomer at the fusing temperature and with a mean particle diameter of at least about 50 microns, in at least the minimum proportion by volume of the fusing surface layer, and with at least the minimum mean particle diameter, so that, in fusing toner to substrate, the fuser member generates an image having a gloss number of about 5 or less.

ISSUES

Appellants argue that "the claimed invention (directed towards the use of relatively large polytetrafluoroethylene particles in a fluoroelastomer layer to provide gloss advantages) is clearly not taught or suggested by Eddy et al in view of Donnelly et al . . . ." App. Br. 5; *see also* Reply Br. 2.

The issue presented by this appeal is whether the combined teachings of Eddy and Donnelly would have resulted in a fuser member having a fuser surface layer comprising filler particles "with a mean particle diameter of at least about 50 microns" so that "the fuser member generates an image having a gloss number of about 5 or less" as called for in independent claim 64.

FINDINGS OF FACT

We find that the following enumerated findings are supported by at least a preponderance of the evidence.

1. Eddy discloses that for developing color images increased thermal conductivity is necessary to provide higher temperatures for fusing the increased amount of toner, improved release is necessary due to the increase in toner used for color developing, extended dwell time at the nip is necessary to ensure complete toner flow, a conformable fuser member is necessary to ensure sufficient release and stripping, and a smooth surface is necessary to provide color images with preferred increased gloss. Col. 2, ll. 22-36.
2. Eddy discloses a fuser roll 20 comprising a fluoropolymer surface 5 made of polytetrafluoroethylene and having fillers

comprised of micron-sized alumina particles 30, high surface area alumina particles 31 which has a particle size smaller than that of alumina 30, and crosslinked silicone particles 32 dispersed therein that "demonstrate[s] excellent results at the higher temperatures, for example from about 150 to about 180° C., necessary in color fusing." Col. 3, ll. 30-32; col. 4, ll. 6-7 and ll. 49-53; col. 5, ll. 16-20; figs. 2, 3.

3. Donnelly discloses a fuser member having a silicone elastomer surface layer that contains low surface energy fillers, such as fluorinated organic polymer materials for improved release of the toner from the fuser member. Col. 1, ll. 12-22.

4. Donnelly discloses a fuser roll 20 having a silicone elastomer blanket 23 containing low surface energy reinforcing fillers, such as polytetrafluoroethylene, which resist thermal degradation at the fixing temperature (e.g., between 220°F and 400°F). Col. 2, ll. 44-46 and col. 4, ll. 60-70.

5. Donnelly teaches that polytetrafluoroethylene meets the surface energy requirements and is able to withstand fixing temperatures for prolonged period due to its release ability, temperature resistance, and reinforcing properties when milled into silicone elastomers. Col. 5, ll. 8-16.

6. Donnelly discloses that a suitable method for making the blanket involves slowly adding the low surface energy filler to a high viscosity silicone gum in a high shear mixing device, such as a

mill, to achieve intimate blending of the components to cause the elongation of particles of the low surface energy filler into threads to provide a fiber structure within the silicone elastomer "to achieve the critical reinforcing effect." Col. 5, ll. 55-69.

7. Appellants' Specification discloses that polytetrafluoroethylene particles are added to fluoroelastomer solution because "[t]he polytetrafluoroethylene particles in fact do not sufficiently retain their shape and size when subjected to the dry compounding" such as milling. Spec. 39, para. [0135].

ANALYSIS

While we agree with the Examiner that Donnelly would have suggested to one having ordinary skill in the art to add a polytetrafluoroethylene filler to the fuser roll of Eddy to improve the roll's release ability, temperature resistance, and reinforcing properties (*see* Facts 3-5), we disagree with the Examiner's determination that it would have been obvious to such a person to have used the polytetrafluoroethylene filler having the claimed particle size to result in a fuser roll being inherently capable of fusing the toner to the substrate to generate the claimed gloss number of about 5 or less. Ans. 5-6.

Donnelly does not teach a specific particle size for its polytetrafluoroethylene filler. Donnelly teaches that to achieve the critical reinforcing effect provided by the filler, the low surface energy filler should be added to a high viscosity silicone gum in a high shear mixing device, such as a mill, to achieve intimate blending of the components and cause the elongation of

particles of the low surface energy filler into threads to provide a fiber structure within the silicone elastomer (Fact 6). Appellants' Specification describes, however, that polytetrafluoroethylene particles do not sufficiently retain their shape and size when subjected to dry compounding such as milling (Fact 7). As such, if one were to incorporate the polytetrafluoroethylene particles to the fuser roll of Eddy in the manner disclosed in Donnelly in order to achieve the reinforcing effect as taught in Donnelly, then the polytetrafluoroethylene particles would likely not have a mean particle diameter of at least about 50 microns as called for in claim 64. Rather, the particles would be milled into threads to form reinforcing fibers in Eddy's fluoropolymer layer.

Further, Eddy is directed to the problem of developing a fuser roll that is particularly suited to developing color images, for which a smooth surface is necessary to provide the color images with preferred increased gloss (Facts 1, 2). If one having ordinary skill in the art were to modify the fuser roll of Eddy to achieve improved characteristics by adding polytetrafluoroethylene filler as taught by Donnelly, such a combination would not necessarily lead to, and would likely not lead to, the use of the filler having a particle size as claimed so that a low gloss number of about 5 or less is achieved. Rather, a person having ordinary skill in the art would add the polytetrafluoroethylene filler to the fluoropolymer surface layer of Eddy in a manner to result in smooth surface for achieving an increased gloss suitable for color images.

Thus, the Examiner's finding that a fuser roll resulting from the combined teachings of Eddy and Donnelly would include filler particles with a mean particle diameter of at least about 50 microns so that the fuser member would inherently generate the low gloss number characteristic of claim 64 is not supported by a preponderance of the evidence. We will not sustain the Examiner's rejection of claim 64 or its dependent claims 65, 69, 70, 86, and 87, as being unpatentable over Eddy and Donnelly.

CONCLUSION

The combined teachings of Eddy and Donnelly would not have resulted in a fuser member having a fuser surface layer comprising filler particles "with a mean particle diameter of at least about 50 microns" so that "the fuser member generates an image having a gloss number of about 5 or less" as called for in independent claim 64.

DECISION

The decision of the Examiner to reject claims 64, 65, 69, 70, 86, and 87 is REVERSED.

REVERSED

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